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Mrs. Will

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief.

MONTHLY NEWS LETTER

WASHINGTON, D.C., DECEMBER 20, 1930.

THE BILL MAKING APPROPRIATIONS FOR THE DEPARTMENT OF AGRICULTURE FOR THE FISCAL YEAR 1932, INTRODUCED IN THE HOUSE DECEMBER 16, PROVIDES FOR THE CREATION OF A BUREAU OF AGRICULTURAL ENGINEERING. THE LANGUAGE OF THE BILL IS AS FOLLOWS:

"FOR NECESSARY EXPENSES FOR GENERAL ADMINISTRATIVE PURPOSES, INCLUDING THE SALARY OF CHIEF OF BUREAU AND OTHER PERSONAL SERVICES IN THE DISTRICT OF COLUMBIA, \$30,000.

FOR INVESTIGATIONS, EXPERIMENTS, AND DEMONSTRATIONS INVOLVING THE APPLICATION OF ENGINEERING PRINCIPLES TO AGRICULTURE, INDEPENDENTLY OR IN COOPERATION WITH FEDERAL, STATE, COUNTY, OR OTHER PUBLIC AGENCIES OR WITH FARM BUREAUS, ORGANIZATIONS, OR INDIVIDUALS; FOR INVESTIGATING AND REPORTING UPON THE UTILIZATION OF WATER IN FARM IRRIGATION AND THE BEST METHODS TO APPLY IN PRACTICE, THE DIFFERENT KINDS OF POWER AND APPLIANCES, THE FLOW OF WATER IN DITCHES, PIPES, AND OTHER CONDUITS, THE DUTY, APPORTIONMENT, AND MEASUREMENT OF IRRIGATION WATER, THE CUSTOMS, REGULATIONS, AND LAWS AFFECTING IRRIGATION, AND THE DRAINAGE OF FARMS, AND OF SWAMPS AND OTHER WET LANDS WHICH MAY BE MADE AVAILABLE FOR AGRICULTURAL PURPOSES; FOR PREPARING PLANS FOR THE REMOVAL OF SURPLUS WATER BY DRAINAGE; FOR DEVELOPING EQUIPMENT FOR FARM IRRIGATION AND DRAINAGE; FOR INVESTIGATING AND REPORTING UPON FARM DOMESTIC WATER SUPPLY AND DRAINAGE DISPOSAL, UPON THE DESIGN AND CONSTRUCTION OF FARM BUILDINGS AND THEIR APPURTENANCES AND OF BUILDINGS FOR PROCESSING AND STORING FARM PRODUCTS, UPON FARM POWER AND MECHANICAL FARM EQUIPMENT, UPON THE ENGINEERING PROBLEMS RELATING TO THE PROCESSING, TRANSPORTATION, AND STORAGE OF PERISHABLE AND OTHER AGRICULTURAL PRODUCTS, AND UPON THE ENGINEERING PROBLEMS INVOLVED IN ADAPTING PHYSICAL CHARACTERISTICS OF FARM LAND TO THE USE OF MODERN FARM MACHINERY; FOR INVESTIGATIONS OF COTTON GINNING UNDER THE ACT APPROVED APRIL 19, 1930 (46 STAT., P. 248); FOR GIVING EXPERT ADVICE AND ASSISTANCE IN AGRICULTURAL ENGINEERING; FOR COLLATING, REPORTING, AND ILLUSTRATING THE RESULTS OF INVESTIGATIONS AND PREPARING, PUBLISHING, AND DISTRIBUTING BULLETINS, PLANS, AND REPORTS; AND FOR OTHER NECESSARY EXPENSES, INCLUDING TRAVEL, RENT, REPAIRS, AND NOT TO EXCEED \$5,000 FOR THE CONSTRUCTION OF BUILDINGS, \$553,840.

TOTAL, BUREAU OF AGRICULTURAL ENGINEERING, \$583,840, OF WHICH AMOUNT NOT TO EXCEED \$139,230 MAY BE EXPENDED FOR PERSONAL SERVICES IN THE DISTRICT OF COLUMBIA."

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MR. McCORORY WENT TO CHICAGO DECEMBER 16, FOR CONFERENCES RELATIVE TO THE CONDUCT OF OUR WORK. J. G. SUTTON AND E. M. MERVINE MET HIM THERE. MR. McCORORY VISITED R. B. GRAY AT TOLEDO ON HIS RETURN TRIP TO WASHINGTON.

ON DECEMBER 8, THERE MET AT THIS OFFICE THE ADVISORY COUNCIL SET UP BY THE SECRETARY OF AGRICULTURE TO DIRECT THE PROJECT RELATING TO RESEARCH IN FARM STRUCTURES. THIS IS THE PROJECT ON WHICH PROFESSOR GIESE OF THE IOWA STATE COLLEGE HAS BEEN ENGAGED FOR THE PAST YEAR. THE PURPOSE OF THE CONFERENCE WAS TO DISCUSS THE REPORT WHICH PROFESSOR GIESE HAS PREPARED ON HIS WORK, ALSO TO CONSIDER WHAT FURTHER ACTIVITIES SHOULD BE UNDERTAKEN BY THE COUNCIL IN CONNECTION WITH THIS SUBJECT. THE COUNCIL WAS ADDRESSED BY DR. WOOD, DIRECTOR OF SCIENTIFIC WORK. IT WAS DECIDED THAT THE COUNCIL SHOULD BE CONTINUED IN EXISTENCE, AND ACTION WAS TAKEN THAT SHOULD RESULT IN MORE PROMINENCE BEING GIVEN TO STRUCTURES RESEARCH.

A CONFERENCE WAS HELD AT RALEIGH, N. C. EARLY IN DECEMBER ATTENDED BY G. R. BOYD AND G. A. CUMINGS, OF THIS DIVISION AND PROFESSOR ROGERS OF THE NORTH CAROLINA EXPERIMENT STATION, FOR THE PURPOSE OF EXAMINING THE SURVEYS OF FARMS MADE DURING THE PAST SUMMER IN CONNECTION WITH THE FARM LAND DEVELOPMENT PROJECT. LATER IN THE MONTH S. P. LYLE ALSO WENT TO RALEIGH, TO CONFER REGARDING THIS PROJECT. THE PURPOSE OF THESE CONFERENCES WAS TO PREPARE DETAILED RECOMMENDATIONS FOR THE USE OF FARMERS WHOSE LANDS HAD BEEN SURVEYED, LOOKING TO THE IMPROVEMENT OF THEIR LAND, SUCH AS DRAINING WET AREAS, RELOCATION OF FENCES, CLEARING AND REMOVAL OF STONES AND OTHER OBSTRUCTIONS TO CULTIVATION. SIMILAR CONFERENCES WILL BE HELD WITH REGARD TO FARMS SURVEYED IN GEORGIA AND IN MINNESOTA.

F. E. STAEBNER RECENTLY MADE A SURVEY OF A PROPOSED IRRIGATION SYSTEM FOR AN APPLE ORCHARD AT SLEEPY CREEK, WEST VIRGINIA.

A. H. SENNER ASSISTED BY W. R. HUMPHRIES IS MAKING A SERIES OF TESTS IN THE LABORATORY OF THE JOHNS HOPKINS UNIVERSITY, AT BALTIMORE, DESIGNED TO DEVELOP THE RELATIVE MERITS OF THE BLUE FLAME AND YELLOW FLAME TYPES OF OIL BURNERS.

THE WORK ON THE COTTON GINNING LABORATORY AT STONEVILLE, MISS. UNDER THE DIRECTION OF C. A. BENNETT, IS PROGRESSING SATISFACTORILY. THIS BUILDING IS OF HOLLOW TILE CONSTRUCTION WITH STUCCO SURFACE. THE MECHANICAL EQUIPMENT TO BE USED IN THE FIRST PHASES OF THE STUDY IS NOW BEING INSTALLED. WITH THE EXCEPTION OF GRAVELING THE ROOF THE BUILDING PROPER IS PRACTICALLY COMPLETED AND SHOP MACHINERY WILL SOON BE IN PLACE. CONSIDERABLE COTTON IS ON HAND READY FOR BEGINNING THE TESTS AS SOON AS THE EQUIPMENT IS INSTALLED.

FRED C. SCOBEE RECENTLY INSPECTED THE NEW TIGER CREEK FLUME OF THE PACIFIC GAS & ELECTRIC COMPANY, ON WHICH HE WILL MAKE CAPACITY TESTS AS SOON AS WATER IS TURNED INTO THE SYSTEM. THE FLUME IS A UNIT OF THE COMPANY'S PROJECT FOR THE HYDRO-ELECTRIC DEVELOPMENT UNDER SALT SPRINGS DAM ON THE MOKELUMNE RIVER IN CALIFORNIA, AND IS THE

GREATEST STRUCTURE OF ITS TYPE THUS FAR COMPLETED. A RECTANGULAR CON-
CRETE BENCH FLUME 14 FEET WIDE AND 7 FEET DEEP WITH A CAPACITY OF 550
SECOND-FOOT FOR 18 MILES TO A FOREBAY, AND A CAPACITY OF 650 SECOND-
FOOT FOR THE NEXT TWO MILES TO TIGER CREEK POWER HOUSE, HAS BEEN CON-
STRUCTED, AT AN APPROXIMATE TOTAL COST OF \$4,000,000. FOR THE WHOLE
PROJECT ONE SECOND-FOOT OF WATER-CAPACITY IN THE FLUME IS CAPITALIZED
AT ABOUT \$60,000. THE BERKELEY OFFICE IS COOPERATING INFORMALLY WITH
THE COMPANY IN A DETERMINATION OF THE DESIGN COEFFICIENTS AND LATER IN
MAKING TESTS OF CARRYING CAPACITY.

THE TOPOGRAPHY OF THE CANYON INVOLVED VERY SHARP BENDS IN THE
FLUME. AFTER PRELIMINARY TESTS ON SIMILAR STRUCTURES ON OTHER PARTS
OF THE COMPANY SYSTEM, A MINIMUM RADIUS OF CURVATURE OF 75 FEET WAS
ACCEPTED. SOME REACHES OF THE CANYON ARE GENTLY SINUOUS AND THE FLUME
IS APPROXIMATELY STRAIGHT FOR ABOUT A MILE. IN OTHER PORTIONS SEVERAL
SHARP CURVES IN VARIOUS COMBINATIONS WILL FURNISH AN EXCELLENT OPPOR-
TUNITY - BETTER THAN THAT AFFORDED BY A LABORATORY - FOR TRYING OUT
THE INFLUENCE OF BENDS IN THE MATTER OF RETARDATION COEFFICIENTS FOR
LARGE SCALE STRUCTURES. IT WILL ALSO BE INTERESTING TO COMPARE THE
VELOCITY-CONTOURS IN A SHARP CURVE WITH THOSE DEVELOPED BY MR. YARNELL
AT IOWA CITY. LIKewise THE EFFECT OF TWO CURVES IN THE SAME DIRECTION
CAN BE COMPARED WITH THAT OF REVERSE CURVES. AS THE COMPANY WILL HAVE
A SECOND FLUME OF SIMILAR CHARACTER TO INSTALL IMMEDIATELY BELOW TIGER
CREEK POWER HOUSE, THEY ARE MUCH INTERESTED IN FUTURE TESTS AND WILL
COOPERATE TO THE FULLEST EXTENT. ONE ADVANTAGE OF TESTS ON POWER
CHANNELS RATHER THAN IRRIGATION CHANNELS LIES IN THE POSSIBILITY OF
CHANGING THE FLOW WITHOUT INCONVENIENCE, MERELY THROWING VARIATIONS IN
LOAD TO SOME OTHER POWER PLANT - IT BEING DIFFICULT IN THE CASE OF IRRI-
GATION CHANNELS TO ARRANGE FOR SUDDEN VARIATION IN LOAD.

A. T. MITCHELSON HAS SPENT CONSIDERABLE TIME IN SOUTHERN
CALIFORNIA WHERE, WITH MR. YOUNG, HE IS SUPERVISING THE INSTALLATION
OF FLUMES, MEASURING DEVICES AND OTHER EQUIPMENT FOR SUPPLEMENTING THE
WATER-SPREADING STUDIES CARRIED ON LAST YEAR. DURING THE WINTER BOTH
MR. MITCHELSON AND MR. YOUNG WILL SPEND CONSIDERABLE TIME ON THIS PROJECT.

REPORT BY D. W. BLOODGOOD ON "THE GROUND WATER OF MIDDLE
RIO GRANDE VALLEY AND ITS RELATION TO DRAINAGE" HAS BEEN PUBLISHED AS
BULLETIN No. 184 OF THE NEW MEXICO AGRICULTURAL EXPERIMENT STATION.

J. C. MARR SUBMITTED A REPORT ENTITLED "SOME OBSERVATIONS OF
TREES EXPERIMENTALLY PLANTED IN ALKALI SOIL," COVERING ALKALI RECLA-
MATION EXPERIMENTS CARRIED ON BY THIS DIVISION AND THE IDAHO AGRI-
CULTURAL EXPERIMENT STATION NEAR CALDWELL, IDAHO. NOTEWORTHY RESULTS
HAVE BEEN PROCURED DURING THIS THREE-YEAR INVESTIGATION, WITH REFERENCE
TO THE TOLERANCE OF CERTAIN SPECIES OF TREES FOR ALKALI AND THE EFFECT
OF DIFFERENT METHODS OF PLANTING.

CARL ROHWER PREPARED A BRIEF DISCUSSION OF THE RESULTS OF
HIS EVAPORATION EXPERIMENTS AT STONYFORD, CALIF., DURING THE PAST
SUMMER, TO BE INCLUDED IN HIS REPORT ON EVAPORATION FROM FREE WATER
SURFACES, SUBMITTED LAST APRIL. THIS INCLUDES RECOMMENDATIONS AS TO

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THE BEST TYPES OF PANS FOR CARRYING ON EVAPORATION EXPERIMENTS AND THE PROCEDURE TO BE FOLLOWED IN ORDER TO MAKE THE RESULTS COMPARABLE.

ON NOVEMBER 24 O. A. FARIS ACCOMPANIED THE TEXAS BOARD OF WATER ENGINEERS ON A TRIP TO THE MATHIS DAM ON THE NUECES RIVER ABOUT 40 MILES NORTH OF CORPUS CHRISTI, TO INVESTIGATE THE CAUSE OF THE FAILURE OF THIS DAM THE DAY BEFORE. THE DAM, WHICH IS AN EARTHEN STRUCTURE, SPRINKLED AND ROLLED, WITH A CONCRETE SPILLWAY SECTION 1,100 FEET LONG IN THE MAIN VALLEY, A HEIGHT OF APPROXIMATELY 60 FEET AND A SPILLWAY CREST 15 FEET LOWER, FORMED A RESERVOIR FOR THE WATER SUPPLY OF CORPUS CHRISTI, AND HAD BEEN FILLED 14 MONTHS. ON NOVEMBER 23 AT 12:30 P.M., WITH WATER ABOUT 1 INCH DEEP ON THE CREST OF THE SPILLWAY, WATER WAS OBSERVED BOILING UP AT THE DOWNSTREAM TOE NEAR THE NORTH END AND IN LESS THAN 30 MINUTES THE NORTH ABUTMENT HAD FAILED AND A NOTCH WAS OPENED THROUGH THE EARTHEN SECTION, RELEASING ABOUT 60,000 ACRE-Feet OF WATER. AT THE TIME OF THE VISIT OF THE BOARD OF WATER ENGINEERS, WATER WAS TOO HIGH TO PERMIT OF A DETERMINATION OF THE CAUSE OF FAILURE.

H. F. BLANEY SPENT SEVERAL DAYS IN THE BERKELEY OFFICE COMPLETING REVISION OF HIS BULLETIN ON COST OF WATER FOR IRRIGATION IN CALIFORNIA. (BUL. NO. 8, CALIF. DEPT. OF PUBLIC WORKS). IN THIS REVISION HE HAS BEEN ASSISTED BY MESSRS. HUTCHINS, FELLOWS, AND SEVERAL MEN OF MR. ADAMS' OFFICE.

M. R. LEWIS AND ARCH WORK SUBMITTED A REPORT, TO BE PUBLISHED BY THE OREGON AGRICULTURAL EXPERIMENT STATION, ENTITLED "ORCHARD DRAINAGE IN THE MEDFORD AREA, JACKSON COUNTY, OREGON." THE REPORT DEALS WITH METHODS FOR CONTROLLING CONDITIONS ARISING FROM HIGH WATER TABLE IN THE ORCHARD AREAS OF THIS LOCALITY.

R. L. PARSHALL ATTENDED A MEETING OF THE IRRIGATION HYDRAULICS COMMITTEE OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS AT SAN FRANCISCO NOVEMBER 14 AND 15.

C. K. SHEDD REPORTS THAT INTERMITTENT RAINS HAVE INTERRUPTED TERRACING WORK ON THE BETHANY, MO., PROJECT AND THAT THE GROUND WILL LIKELY NOT BE IN PROPER CONDITION FOR THE RESUMPTION OF THE CONSTRUCTION OF TERRACES UNTIL SPRING. NEARLY 7 MILES OF TERRACES HAVE BEEN CONSTRUCTED ON THE BETHANY FARM.

H. S. RIESBOL SUPERVISED THE CONSTRUCTION OF ABOUT 5 MILES OF TERRACES ON THE SIMPSON FARM ABOUT TEN MILES SOUTHWEST OF GUTHRIE, OKLA. DIFFERENT METHODS WERE EMPLOYED IN BUILDING TERRACES OF DIFFERENT SIZES WITH A CATERPILLAR TRACTOR AND ROAD GRADER FOR THE PURPOSE OF GETTING INFORMATION ON THE COST OF CONSTRUCTION OF TERRACES BUILT WITH THIS MACHINERY. THE COST OF ALL THE WORK WAS BORNE BY THE OWNER OF THE FARM.

R. W. BAIRD REPORTS THE WETNESS OF THE GROUND DUE TO MANY RAINS DURING THE PAST MONTH HAS SLOWED DOWN HIS TERRACING WORK ON THE TYLER, TEXAS FARM. ABOUT THREE MILES OF TERRACES HAVE BEEN BUILT AND IT IS LIKELY THAT TERRACING WORK CAN BE CONTINUED INTERMITTENTLY THROUGHOUT THE WINTER AS THE CONDITION OF THE GROUND PERMITS BETWEEN RAINS.

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R. R. DRAKE REPORTS THAT THE RAINFALL AT HAYS, KANSAS, FOR OCTOBER AND NOVEMBER AMOUNTING TO ABOUT 8 INCHES EXCEEDED THE RECORDS FOR THESE MONTHS DURING A PERIOD OF 62 YEARS. THE LEVEL TERRACES WITH CLOSED ENDS HELD ALL THE RAINFALL AND NO BREAKS OCCURRED. WITHIN 24 TO 48 HOURS AFTER A RAINFALL OF 4 INCHES ON OCTOBER 5 PRACTICALLY ALL OF THE WATER HAD DISAPPEARED THROUGH PERCOLATION IN THE TERRACE CHANNELS. A 2-INCH RAIN ON NOVEMBER 19 AGAIN FILLED THE TERRACE CHANNELS AND EXCEPT IN THE CASE OF A FEW TERRACES THE WATER DISAPPEARED IN FROM 36 TO 60 HOURS AFTER THE RAIN. IN A FEW LOW PLACES ALONG THE TERRACES THE WATER HAS STOOD FOR A PERIOD OF 17 DAYS. THE EFFECT OF THIS WATER UPON CROP YIELDS WILL AFFORD INFORMATION AS TO THE MERITS OF OPEN AND CLOSED END TERRACES FOR THIS PARTICULAR LOCALITY.

C. E. RAMSER ATTENDED THE MEETING OF THE POWER AND MACHINERY DIVISION OF THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS AT CHICAGO, ON DECEMBER 1, 2 AND 3 AND PRESENTED A PAPER ILLUSTRATED BY SLIDES ON "A GROWING NEED FOR IMPROVED MACHINERY FOR TERRACE CONSTRUCTION AND THE FARMING OF TERRACED LAND."

A CONFERENCE WAS HELD ON NOVEMBER 28 AT STATESVILLE, N.C. WITH REPRESENTATIVES OF THE BUREAU OF CHEMISTRY AND SOILS AND THE NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION. AN INSPECTION OF THE STATESVILLE SOIL EROSION FARM WAS MADE AND A PROGRAM OF EXPERIMENTS ON SOIL EROSION WAS ADOPTED. L.A. JONES, C. E. RAMSER, AND F. O. BARTEL ATTENDED THIS CONFERENCE.

R. B. GRAY SPENT NOVEMBER 24 TO 28 AT THE WASHINGTON OFFICE, AND DECEMBER 1 TO 4 IN CHICAGO ATTENDING THE FARM MACHINERY DIVISION MEETING OF A.S.A.E. AND CONFERRING WITH MANUFACTURERS ON CORN BORER AND OTHER MACHINERY.

FRANK IRONS SUPERVISED THE INSTALLATION OF AND IN ATTENDANCE WITH THE MACHINERY WHICH WAS A PART OF THE JOINT CORN BORER EXHIBIT OF THE BUREAU OF PUBLIC ROADS, PLANT QUARANTINE AND CONTROL ADMINISTRATION AND BUREAU OF ENTOMOLOGY AT THE INTERNATIONAL LIVESTOCK SHOW IN CHICAGO, NOVEMBER 28 TO DECEMBER 8. MUCH INTEREST WAS MANIFESTED, PARTICULARLY IN THE CONTROL MACHINERY WHICH CONSISTED IN A SPECIAL FOUR-BAR SIDE-DELIVERY RAKE, SLED STALK SHAVER, CULTIVATOR WITH THREE-ROW SHAVER ATTACHMENT, CORN BINDER WITH STATIONARY-KNIFE LOW-CUTTING ATTACHMENT, PLOW WITH STANDARD EQUIPMENT, SPECIAL PLOW ATTACHMENTS AND LOW-CUTTING CORN HOES.

THAYER CLEAVER, STATIONED AT URBANA, SPENT DECEMBER 1 AND 2 ATTENDING THE FARM MACHINERY DIVISION MEETING OF A.S.A.E. IN CHICAGO.

